

Amendments to the Claims:

Listing of Claims:

- 5 1. (currently amended) An optical disc drive circuit comprising:
a bus interface for communications with a host;
an interface unit electrically coupled to the bus interface for downloading
operational firmware from the host;
a control circuit electrically coupled to the interface unit for transferring the
10 downloaded operational firmware to a volatile memory; and
a microprocessor electrically coupled to the control circuit for executing the
downloaded operational firmware while stored in the volatile memory;
wherein the microprocessor controls the normal operations of the optical disc
drive circuit according to the downloaded operational firmware.
- 15 2. (original) The optical disc drive circuit of claim 1 wherein the bus interface conforms
to USB, IDE, SATA, SAS, or SCSI interface standards.
- 20 3. (original) The optical disc drive circuit of claim 1 wherein the interface unit is a macro.
4. (original) The optical disc drive circuit of claim 3 wherein the macro comprises
handshaking, data reception, and writing received data into the memory functions.
- 25 5. (currently amended) The optical disc drive circuit of claim 1 wherein the interface unit
further downloads initialization data for the optical disc drive circuit.
6. (original) The optical disc drive circuit of claim 1 wherein the control circuit is

electrically coupled to a non-volatile memory which stores initialization data without storing operational firmware.

- 5 7. (original) The optical disc drive circuit of claim 1 wherein the host is a computer system.
8. (original) The optical disc drive circuit of claim 1 wherein the microprocessor executes the downloaded operational firmware without accessing a non-volatile memory.
- 10 9. (currently amended) The optical disc drive circuit of claim 1 wherein the normal operations of the optical disc drive circuit at least include reading data from an optical disc.
- 15 10. (currently amended) The optical disc drive circuit of claim 1 wherein the volatile memory comprises the downloaded operational firmware being executed by the microprocessor to control normal operations of the optical disc drive circuit.
- 20 11. (currently amended) An optical disc drive comprising a download mode wherein operational firmware is downloaded from an external host and stored into a volatile memory of the optical disc drive, followed by a normal mode wherein a microprocessor of the optical disc drive executes the ~~stored~~ operational firmware stored in the volatile memory to control normal operations of the optical disc drive.
- 25 12. (original) The optical disc drive of claim 11 wherein the normal operations of the optical disc drive at least include reading data from an optical disc, processing the data, and transferring the processed data to the host.
13. (original) The optical disc drive of claim 11 wherein data required for the

initialization of the optical disc drive is downloaded from the external host to initialize the optical disc drive before the operational firmware is downloaded.

14. (original) The optical disc drive of claim 11 wherein the operational firmware is
5 downloaded over a bus interface conforming to USB, IDE, SATA, SAS, or SCSI interface standards.

15. (original) The optical disc drive of claim 11 wherein the host is a computer system.

10 16. (original) A method of operating an optical disc drive, the optical disc drive comprising a control circuit connected to a microprocessor, a volatile memory, and a bus interface connected to a host, the method comprising:
downloading operational firmware from the host;
writing the operational firmware into the volatile memory; and
15 the microprocessor executing the operational firmware in the volatile memory to control normal operations of the optical disc drive.

17. (original) The method of claim 16 further comprising downloading data required for
the initialization of the optical disc drive from the external host before the
20 operational firmware is downloaded.

18. (original) The method of claim 16 wherein the operational firmware is downloaded
over a bus interface conforming to USB, IDE, SATA, SAS, or SCSI interface
standards.
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19. (original) The method of claim 16 further comprising the optical disc drive
transmitting an electrical signal to an application program in the host to begin
downloading the operational firmware.

20. (original) The method of claim 16 wherein the host is a computer system.

21. (original) A computer system comprising:

- 5 a host computer comprising operational firmware for controlling operations of an
 optical disc drive; and
 an optical disc drive comprising:
 a volatile memory comprising the operational firmware downloaded from the
 host computer over a connecting bus interface; and
10 a microprocessor executing the operational firmware in the volatile memory
 for controlling normal operations of the optical disc drive.

22. (original) The computer system of claim 21 wherein the normal operations of the
 optical disc drive at least include controlling the rotational speed of an optical disc
15 in the optical disc drive and reading data from the optical disc.

23. (original) The computer system of claim 21 wherein the bus interface conforms to
 USB, IDE, SATA, SAS, or SCSI interface standards.

20 24. (original) The computer system of claim 21 wherein data required for the initialization
 of the optical disc drive is downloaded from the external host before the operational
 firmware is downloaded.

25. (original) An optical disc drive controller comprising:

- 25 a bus interface for communications with a host;
 a volatile memory for storing operational firmware downloaded from the host;
 a microprocessor for controlling normal operations of the optical disc drive by
 executing the operational firmware stored in the volatile memory;

an RF circuit; and
a control circuit connected to the bus interface, the volatile memory, the
microprocessor, and the RF circuit.

- 5 26. (original) The optical disc drive controller of claim 25 wherein the volatile memory
comprises the downloaded operational firmware being executed by the
microprocessor to control normal operations of the optical disc drive.
- 10 27. (original) An optical disc drive circuit used in a host system, wherein the optical
disc drive circuit has operational firmware downloaded from the host system to a
volatile memory through a bus interface every time after the host being powered on,
the optical disc drive circuit comprising:
a microprocessor for executing the downloaded operational firmware while stored
in the volatile memory;
15 wherein the microprocessor controls the normal operations of the optical disc
drive according to the downloaded operational firmware.
- 20 28. (original) The optical disc drive circuit of claim 27 wherein the bus interface
conforms to USB, IDE, SATA, SAS, or SCSI interface standards.
29. (original) The optical disc drive circuit of claim 27 wherein the microprocessor
accesses a non-volatile memory which stores initialization data without storing
operational firmware.
- 25 30. (original) The optical disc drive circuit of claim 27 wherein the host system is a
computer system.
31. (original) The optical disc drive circuit of claim 27 wherein the microprocessor

executes the downloaded operational firmware without accessing a non-volatile memory.

5 32. (original) The optical disc drive circuit of claim 27 wherein the host system comprises the volatile memory.

10 33. (original) The optical disc drive circuit of claim 27 wherein the host system comprises a host controller accessing the volatile memory that is shared by the host system and the microprocessor during the normal operation.

15 34. (original) The optical disc drive circuit of claim 27 wherein the volatile memory is accessed only by the optical disc drive circuit on the normal operation.

15 35. (original) The optical disc drive circuit of claim 27 wherein the optical disc drive circuit comprises the volatile memory.